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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/508,809	04/07/2005	Robert George Dunster	14036.0050USWO	6212

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EXAMINER	
BOECKMANN, JASON J	
ART UNIT	PAPER NUMBER
3752	
MAIL DATE	DELIVERY MODE
08/27/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/508,809	DUNSTER ET AL.	
	Examiner	Art Unit	
	Jason J. Boeckmann	3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-14, 18, 24-26, 30-32* is/are pending in the application.

4a) Of the above claim(s) *6,8,10 and 11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-5,7,9,12-14,18,24-26 and 30-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/16/2009 has been entered.

Claim Objections

Claim 31 is objected to because of the following informalities: It appears that the preamble of claim 31 should read: "A method according to claim 18". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 3-5, 7, 9, 13, 14, 18, 25 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Anthony, Jr (3,342,271), or, in the alternative, under 35

U.S.C. 103(a) as obvious over Anthony, Jr (3,342,271) in view of Sundholm (6,318,474).

Anthony, Jr shows a fire and explosion suppression system, comprising: a source of pressurized liquid extinguishing agent (28), a source of a pressurized gas (24), a mist producing means (nozzle 15 produces a mist as shown in the figure) connected to receive a flow of the liquid extinguishing agent at a mass flow rate thereof to produce a mist therefrom, a mixing means (10) for mixing the already-produced mist into a flow of the pressurized gas to produce a discharge in the form of a two-phase mixture comprising a suspension of droplets of the mist in the pressurized gas (the two phase mixture occurs before the fluid reaches the net 11 to form the foam), wherein the flow of the pressurized gas has a mass flow rate and the pressurized gas is pressurized by being stored under pressure which thus reduces during the flow thereof and reduces the mass flow rate of the gas (as gas leaves the tank, the mass flow rate of the gas inherently reduces, and a control means (35, 34, 27, 25) including means for applying the pressure of the stored gas to pressurize the liquid extinguishing agent (34) whereby the reducing applied pressure correspondingly reduces the mass flow rate of the liquid extinguishing agent (when the applied pressure is reduced via valve 35, the mass flow rate of the liquid is also reduced) so as to control the ratio of the mass flow rate of the liquid extinguishing agent to the mass flow rate of the pressurized gas towards such a value (that value is 1:1, because as the gas enters the liquid tank at a specified mass flow rate, the liquid must leave at the same mass flow rate) as to tend to produce a constant droplet size distribution in and for substantially the duration of the discharge,

and a controllable valve (35) for adjusting the mass flow rate of the liquid agent during the discharge.

In the alternative, if the applicant disagrees that nozzle 15 produces a mist, the following 103 rejection is hereby provided.

Anthony, Jr shows all aspects of the applicant's invention as discussed above, but does not disclose a mist producing means.

However, Sundholm shows a mist nozzle (1) that produces a fine mist (column 1, line 37).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to replace the nozzle 15 of Anthony, Jr, with the mist nozzle of Sundholm, in order to spray a fine mist of the liquid, as taught by Sundholm, (column 1, line 37).

It is noted that in claims 4, and 5, 112 6th paragraph is not invoked by the term: "means for mixing…" and "means for applying…" because both the means for statements are further modified by further structure, material or acts for achieving the specified function. See MPEP 2181.

Regarding claim 3, the control means includes a means for applying the pressure of the stored gas to pressurize the liquid (34, 35).

Regarding claim 7, the valve means comprises a controllable metering valve (35) for adjusting the valve in dependence of the mass flow rate of the gas. The valve is fully capable of being manually adjusted in dependence of the pressure of the stored gas.

Regarding claim 9, it is noted that 112 6th paragraph is invoked by the term: "means for controlling the pressure of the pressurized liquid extinguishing agent." See MPEP 2181. However the device of Terpigorjev et al. includes a functional equivalent control means; valve 36.

Regarding claims 13, 14, 25 and 26, the liquid extinguishing agent is water and a chemical substance.

Regarding claim 18, Anthony, Jr, alone, or in combination with Sundholm as discussed above, discloses a device that in its use produces a mist of a liquid extinguishing agent from a flow of the liquid extinguishing agent (28) being mixed into a flow of pressurized gas (24) to produce a discharge in the form of a two-phase mixture comprising a suspension of droplets of the mist (the mist is either produced by nozzle 15 of Anthony, Jr or nozzle 1 of Sundholm) in the pressurized gas (it is noted that the two phase mixture is present in chamber 10 before the net 11), The device also controls the ratio of the mass flow rate of the liquid extinguishing agent to the mass flow rate of the pressurized gas towards such a value as to tend to produce a constant droplet size distribution in and for substantially the duration of the discharge (it is noted that the mass flow rate of the gas entering the container 28 is equal to the mass flow rate of the liquid leaving the container and therefore the ration is 1:1 for the duration of the discharge), wherein the pressurized gas is pressurized by being stored under pressure which thus reduces during the flow thereof (inherently the pressure and the mass flow rate of the gas in the tank 24 will reduce as gas leaves the tank) and reduces the mass flow rate of the gas, and wherein the device controls the ratio to produce a constant

droplet size distribution in and for substantially the duration of the discharge is achieved at least partially by applying the pressure of the stored gas to pressurize the liquid extinguishing agent (via pipe 34) whereby the reducing applied pressure correspondingly reduces the mass flow rate of the liquid extinguishing agent as the mass flow rate of the gas undergoes said reduction thereof (if the pressure in pipe 34 after valve 35 is reduced, the liquid in pipe 32 will also be reduced).

Claims 3-5, 7, 9, 12-14, 18, 25, 26 and 32 is rejected under 35 U.S.C. 102(b) as being anticipated by Terpigorjev et al. (WO 95/24274).

Terpigorjev et al. shows a fire and explosion suppression system, comprising: a source of pressurized liquid extinguishing agent (1), a source of a pressurized gas (4), a mist producing means (the outlet of pipe 2 into mixing chamber 3) connected to receive a flow of the liquid extinguishing agent at a mass flow rate thereof to produce a mist therefrom. It is noted that the outlet (or nozzle) of pipe 2 into mixing chamber 3 creates a mist in as much of a way as nozzle 13 of the present invention creates a mist. It is inherent that a mist is produced because the flow of the gas/liquid mixture shown in figure 2, includes small liquid droplets (or a mist) immersed in the gas flow. A mist must have been produced prior to being mixed with the gas in order to produce the small liquid droplets inside the flow of the gas shown in figure 2. The device further including a mixing means (3) for mixing the already-produced mist into a flow of the pressurized gas to produce a discharge in the form of a two-phase mixture comprising a suspension of droplets of the mist in the pressurized gas (figure 2), wherein the flow of the

pressurized gas has a mass flow rate and the pressurized gas is pressurized by being stored under pressure which thus reduces during the flow thereof and reduces the mass flow rate of the gas (it is inherent that the mass flow rate of the gas reduces as the pressure of the gas reduces when the gas leaves the tanks 4), and a control means (7, 8, 21) including means for applying the pressure of the stored gas to pressurize the liquid extinguishing agent (21) whereby the reducing applied pressure correspondingly reduces the mass flow rate of the liquid extinguishing agent (when the applied pressure is reduced via valve 8, the mass flow rate of the liquid is also reduced it is a 1 to 1 ratio) so as to control the ratio of the mass flow rate of the liquid extinguishing agent to the mass flow rate of the pressurized gas towards such a value as to tend to produce a constant droplet size distribution in and for substantially the duration of the discharge, and a controllable valve (8) for adjusting the mass flow rate of the liquid agent during the discharge (valve 8 controls the mass flow rate of the gas into tank 1 and therefore controls the mass flow rate of the liquid leaving the tank).

It is noted that in claims 4, 5 and 12, 112 6th paragraph is not invoked by the term: “means for mixing…” and “means for applying…” because both the means for statements are further modified by further structure, material or acts for achieving the specified function. See MPEP 2181.

Regarding claim 12, the device of Terpigorjev et al. is fully capable of having regulator valve 7 turned off and regulator valve 8 open, this will cause the liquid flow to initiate before the gas flow.

Regarding claim 3, the control means includes a means for applying the pressure of the stored gas to pressurize the liquid (21, 8).

Regarding claim 7, the valve means comprises a controllable metering valve (8) for adjusting the valve in dependence of the mass flow rate of the gas. The valve is fully capable of being manually adjusted in dependence of the pressure of the stored gas.

Regarding claim 9, it is noted that 112 6th paragraph is invoked by the term: "means for controlling the pressure of the pressurized liquid extinguishing agent." See MPEP 2181. However the device of Terpigorjev et al. includes a functional equivalent control means; valve 8.

Regarding claims 13, 14, 25 and 26, the liquid extinguishing agent is water and a chemical substance (page 9, line 20).

Regarding claim 18, Terpigorjev et al., discloses a device that in its use produces a mist (from nozzle 6) of a liquid extinguishing agent from a flow of the liquid extinguishing agent (1) being mixed into a flow of pressurized gas (4) to produce a discharge in the form of a two-phase mixture comprising a suspension of droplets of the mist (the mist is produced by the outlet of pipe 2 into chamber 3 just as it is produced by outlet 13 of the present invention, see. fig 2 for the mist suspended in the gas) in the pressurized gas. The device also controls the ratio of the mass flow rate of the liquid extinguishing agent to the mass flow rate of the pressurized gas towards such a value as to tend to produce a constant droplet size distribution in and for substantially the duration of the discharge (it is noted that the mass flow rate of the gas entering the container 1 is equal to the mass flow rate of the liquid leaving the container and

therefore the ration is 1:1 for the duration of the discharge), wherein the pressurized gas is pressurized by being stored under pressure which thus reduces during the flow thereof (inherently the pressure and the mass flow rate of the gas in the tank 4 will reduce as gas leaves the tank) and reduces the mass flow rate of the gas, and wherein the device controls the ratio to produce a constant droplet size distribution in and for substantially the duration of the discharge is achieved at least partially by applying the pressure of the stored gas to pressurize the liquid extinguishing agent (via pipe 21) whereby the reducing applied pressure correspondingly reduces the mass flow rate of the liquid extinguishing agent as the mass flow rate of the gas undergoes said reduction thereof (if the pressure in pipe 21 after valve 8 is reduced, the liquid in pipe 2 will also be reduced).

Regarding claim 32, Terpigorjev et al. discloses a device which in its use inherently provides a source of an extinguishing liquid (1) and a source of a pressurized extinguishing gas (4), causes the liquid and the gas to flow simultaneously along a common pipe (5) to a nozzle (6) so that a two-phase (or plug flow, see abstract) mixture comprising droplets of the liquid suspended in the gas is discharged from the nozzle, controls a ratio of a mass flow rate of the liquid to a mass flow rate of the gas towards a value to produce a desired droplet size distribution in and for substantially a duration of the discharge (the regulator valve 8 controls the ratio of the mass flow rate of the liquid to a mass flow rate of the gas in pipe 21 towards a value, that ratio will be 1:1 because the mass flow rate of the gas entering the container 1 will have to equal the mass flow

rate of the liquid leaving the container), wherein the pressurized gas is pressurized by being stored under pressure which reduces during the flow thereof and reduces the mass flow rate of the gas, and applies the pressure of the stored gas to pressurize the liquid (via tube 21), whereby the reduced applied pressure correspondingly reduces the mass flow rate of the liquid extinguishing agent.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 12, 33 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terpigorjev et al. (WO 95/24274).

Regarding claim 33, Terpigorjev et al. shows all aspects of the applicant's invention as in the rejection of claim 32 above, but fails to specifically disclose that the pipe branches to supply the liquid and the gas to a plurality of nozzles.

However, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have the pipe branch to supply the liquid and the gas to a second nozzle as well as the first nozzle, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art.

Additionally, the addition of a second nozzle would allow for more of the liquid and gas to be dispensed per unit of time and also for the liquid and gas to be dispensed over a greater area.

Regarding claims 12 and 24, Terpigorjev et al. shows a device that performs all steps of method claim 18 above, but fails to specifically disclose that the flow of the liquid is initiated before the flow of the gas is initiated.

However, it is well known in the art that if you want to produce a mist entrained in the flow of a gas, you would need to produce the mist before you add it to the stream of gas.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to operate the device of Terpigorjev et al. by at first, closing off valve 7 and opening up valve 8, thereby creating a mist, and then, once the mist is created, opening of valve 7 in order to add the gas to entrain the mist. Operating the device in this manor will ensure that the output from nozzle 6 will always include a mist of liquid agent weather or not a gas is present.

Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anthony, Jr (3,342,271), in view of Russwurn et al. (6,173,790), or in the alternative over Anthony, Jr (3,342,271) as modified by Sundholm (6,318,474) above, in view of Russwurn et al. (6,173,790),

Anthony, Jr, alone, or as modified by Sundholm above, shows all aspects of the applicant's invention as in claims 1 and 18 above, but does not specifically disclose that the pressurized gas in inert gas.

However, Russwurn et al shows a fire-extinguishing device including pressurized gas that is inert and a liquid fire-extinguishing agent that is water.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention, under the teachings of Russwurn et al., to use inert gas in the fire suppression system of Anthony, Jr. alone, or as modified by Sundholm above, in order to extinguish a fire more quickly as taught by Russwurn.

Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terpigorjev et al. (WO 95/24274), in view of Russwurn et al. (6,173,790).

Terpigorjev et al. shows all aspects of the applicant's invention as in claims 1 and 18 above, but does not specifically disclose that the pressurized gas in inert gas.

However, Russwurn et al shows a fire-extinguishing device including pressurized gas that is inert and a liquid fire-extinguishing agent that is water.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention, under the teachings of Russwurn et al., to use inert gas in the fire suppression system of Terpigorjev et al., in order to extinguish a fire more quickly as taught by Russwurn.

Response to Arguments

Applicant's arguments with respect to claims 3-5, 7, 9, 12-14, 18, 24-26 and 30-33 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason J. Boeckmann whose telephone number is (571)272-2708. The examiner can normally be reached on 8:00- 5:00, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571) 272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jason J Boeckmann/
Examiner, Art Unit 3752
8/25/2009